

CLAIMS

1. A method for applying an edge piece to the edge of a battery plate, comprising:

- 5 (a) providing a thin strip of bendable plastic material;
- (b) bending said strip into an open top U-shaped channel having opposed sides which are interconnected by a bottom element;
- 10 (c) cutting said channel into an edge piece having a length substantially equal to the length of the edge of the battery plate which is to be covered;
- (d) supporting said edge piece with said open top oriented in a particular direction;
- 15 (e) transporting a battery plate toward said open top of said supported edge piece such that the edge of the battery plate will be inserted into said supported edge piece; and
- 20 (f) releasing said edge piece once the edge of the battery plate is inserted therein.

25 2. The method of claim 1, including the additional step of placing said channel over a funnel before it is cut into an edge piece and the edge of the battery plate is inserted therein, said funnel having an inlet with an opening which is large enough to freely pass the battery plate, and an outlet which fits into 30 said open top of said edge piece.

35 3. The method of claim 2 wherein said bending causes said sides of said channel to be angled inwardly toward one another extending away from said bottom element.

4. The method of claim 3 wherein said bottom element of said channel is resilient so that said sides can be moved outwardly with respect to one another and return to the original orientation when released,

5 including the step of spreading apart said sides of said channel before it is placed over said funnel.

5. The method of claim 1, including the additional step of covering the edge of the battery plate
10 with a fiberglass mat prior to inserting it into said edge piece.

6. The method of claim 1, including the step of stopping said strip of material when said channel is
15 in position to be cut into an edge piece, and restarting said strip when a battery plate has been inserted into said edge piece and has been moved out of the path of said channel.

20 7. An apparatus for applying an edge piece to the edge of a battery plate, comprising:

- (a) a feed mechanism which transports a thin strip of bendable plastic material;
- (b) a bending mechanism which forms said strip into an open top, U-shaped channel having opposed sides which are interconnected by a bottom element;
- (c) a first sensor which stops said feed mechanism when said channel is fully inserted into an assembly station;
- (d) a cutter which cuts off the portion of said channel which is inserted into said assembly station to form an edge piece;
- (e) a conveyor which transports a battery plate having an edge toward said edge piece such that said edge is inserted into said open top of said edge piece;

- (f) a support mechanism which supports said edge piece while said edge of said battery plate is being inserted therein; and then releases said edge piece to travel out of said assembly station with said battery plate on said conveyor; and
 - (g) a second sensor which restarts said feed mechanism once said battery plate is completely out of said assembly station.

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8. The apparatus of claim 7, further comprising a funnel located in said assembly station which the sides of said channel fit over as said channel is fed into said assembly station, to facilitate the insertion of said edge into said edge piece.

9. The apparatus of claim 7 wherein said funnel has an inlet opening which is large enough to freely pass said battery plate and an outlet which fits
20 into the open top of said edge piece.

10. The apparatus of claim 7 wherein said funnel comprises opposed thin plates.

25 11. The apparatus of claim 9, including a
spreader for spreading the sides of said channel as said
channel is placed over said funnel.

12. The apparatus of claim 7 wherein said
30 bending mechanism includes:

- (a) a plow which deflects opposed margins of said strip inwardly toward one another;
 - (b) a forming roller which fits between said opposed margins; and
 - (c) a pair of pinch rollers one of which engages each of said margins and presses it against said forming roller.

13. The apparatus of claim 12 wherein:
- (a) said forming roller has engagement faces on each side thereof, said engagement faces being angled so as to bend said sides such that said sides angle inwardly toward one another as they extend away from said bottom element; and
 - (b) said pinch rollers have ends with an angle which is complimentary to the angle of said engagement faces.

14. The apparatus of claim 12 wherein said plow comprises:

- (a) a U-shaped trough having tapered sides that have a minimum height at an inlet end thereof and a maximum height at an outlet end thereof; and
- (b) a deflector which projects into said U-shaped trough.

15. The apparatus of claim 14 wherein said deflector has a width which is slightly less than the width of said trough.

16. The apparatus of claim 15 wherein the width of said deflector is approximately two-thirds the width of said trough.

17. The apparatus of claim 14 wherein said deflector extends substantially to the bottom of said trough.

18. The apparatus of claim 7 wherein said support mechanism comprises:

- (a) an elongate roller which is positioned below said assembly station;

- (b) a stop projecting from said roller; and
 - (c) said roller being rotatable between an engagement position where said stop engages said edge piece of said channel segment and a release position where said stop is removed from said edge piece.

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19. The apparatus of claim 18, including a resistance device which resists the rotation of said roller between its engagement position and release position.

20. The apparatus of claim 19 wherein said resistance device is a counterweight.

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21. An apparatus for bending a thin strip of bendable plastic material into an open top, U-shaped channel having opposed sides which are interconnected by a bottom element, comprising:

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- (a) a plow which deflects opposed margins of said strip inwardly toward one another;
 - (b) a forming roller which fits between said opposed margins; and
 - (c) a pair of pinch rollers one of which engages each of said margins and presses it against said forming roller.

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22. The apparatus of claim 21 wherein:

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- (a) said forming roller has engagement faces on each side thereof, said engagement faces being angled so as to bend said sides such that said sides angle inwardly toward one another as they extend away from said bottom element; and
 - (b) said pinch rollers have ends having an angle which is complimentary to the angle of said engagement faces.

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23. The apparatus of claim 21 wherein said plow comprises:

- (a) a U-shaped trough having tapered sides that have a minimum height at an inlet and thereof and a maximum height at an outlet end thereof; and
 - (b) a deflector which projects into said U-shaped trough.

10 24. The apparatus of claim 23 wherein said deflector has a width which is slightly less than the width of said trough.

25. The apparatus of claim 24 wherein the
width of said deflector is approximately two-thirds the
width of said trough.

26. The apparatus of claim 23 wherein said deflector extends substantially to the bottom of said trough.

27. An apparatus for inserting the edge of a
battery plate into a U-shaped edge protector, comprising
a funnel having an inlet opening which is large enough to
permit a battery plate to freely pass there through, and
an outlet which fits into said U-shaped edge protector.